



## Materials Engineering Branch

### TIP\*



No. 020 Flux Contamination and Corrosion of Wiring

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NASA soldering requirements call for the removal of rosin flux from soldered components by use of alcohol or similar solvent. In many cases the soldered joints are between clear-sheathed wire and printed circuit board terminals or other connections. The clear sheathing allows inspection of the wire through the sheathing at various times after soldering. Therefore, when sheathing is required the clear material is recommended.

During the flux cleaning operation, if care is not taken, the solvent containing the dissolved flux is wicked beneath the wire sheathing where it remains liquid for many days or weeks unless a thorough drying process is employed. As long as the flux remains in a liquid state, it maintains a degree of corrosivity and will attack the wire. Any process that re-hydrates the flux residue can cause corrosion to proceed.

Consequently, there are many instances in which electronic hardware is found to exhibit colored corrosion products, usually green, beneath the clear wire sheathing. Although such corrosion may be superficial in most cases, it is to be avoided. To prevent this care should be taken to apply the flux so that it doesn't flow under the insulation. Cleaning should be done to preclude the wicking of the solvent. A more deliberate inspection should be made to try to detect the fluid beneath the sheathing, and a vacuum bake out should be performed on the hardware when it is detected. It is safe to assume that similar wicking and corrosion can occur beneath opaque wire sheathing, requiring other inspection steps.

Because solder sleeves are virtually impossible to thoroughly clean and accurately inspect they are prime candidates for potential flux contamination and corrosion problems. Therefore, they are not approved for space flight use.

The reader is encouraged to refer to NASA-STD-8739.3 titled, "Soldered Electrical Connections."